

Application No. 10/075,833

Attorney Docket No. PF010013

REMARKS

Claims 1 – 12 are pending in this application with claims 1, 4 – 5, 8 – 9 and 12 being amended by this response and claims 3, 7 and 11 being cancelled by this response.

Claim 1 has been amended to include the limitations contained in claim 3. Claim 5 has been amended to include the limitations contained in claim 7 and claim 9 has been amended to include the limitations contained in claim 11. Claim 4 has been amended to be dependent on independent claim 1. Claim 8 has been amended to be dependent on independent claim 5 and claim 12 has been amended to be dependent on independent claim 9. Claims 3, 7 and 11 are cancelled by this response.

Rejection of Claims 1, 2, 5, 6, 9, and 10 under 35 USC 103(a)

Claims 1, 2, 5, 6, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi et al (US 6,236,848 in view of Takagi (US 6,226,504).

The present claimed invention recites a method for automatically controlling the gain in a radiofrequency signal reception device. The device includes at least one first low-noise amplification stage placed following a reception antenna and at least one variable-gain device placed in the reception facility. The method includes neutralizing the signal received by the antenna and adjusting the gain during the neutralization of the signal received until a predetermined noise level is obtained at the end of the reception facility. During signal reception, the thermal noise power is extracted at the end of the reception facility and the gain is adjusted until a predetermined noise level is obtained. Independent claims 5 and 9 include similar limitations as those recited in independent claim 1.

Amended independent claims 1, 5 and 9 relate to a method for automatic control of the gain in a radiofrequency signal reception device as well as for the device itself. An integral feature of the present claimed invention is the neutralization of the signal received by the antenna (for example by switching off the supply of the first amplifier

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21) and performing a first adjustment of the gain. Thereafter, the thermal noise power is extracted at the end of the reception facility and this information is used to adjust the gain at a predetermined level. Additionally, the inventive method takes into account the noise of the first amplifier (21). Thus, it is possible to generate a command which compensates for the drifting of the gain due to temperature. In fact, the neutralization of the signal received is performed to measure the thermal noise at the end of the chain and make an adjustment of the gain in view of this measurement, this adjustment being done in two steps as now claimed.

Igarashi et al. disclose an integrated circuit for a mobile telephone including a variable gain amplifier for amplifying a received signal with a variable gain. The circuit further includes a low pass filter for attenuating harmonic components of the signal amplifier by the variable gain amplifier. Igarashi et al. further disclose a QPSK demodulator for demodulating by quadric-phase shift keying the signal having passed through the low pass filter. Furthermore, Igarashi et al. relates to a receiver IC circuit for a mobile phone. Therein, Igarashi et al. disclose that the gain of the variable amplifier 114 is controlled by a signal that is a function of the intensity of the received signal (see column 1 – lines 42 and 43). However, Igarashi et al. neither disclose nor suggest that “during signal reception...extraction of the thermal noise power at the end of the reception facility” as claimed in amended claims 1, 5 and 9 of the present invention. Furthermore, Igarashi et al. neither disclose nor suggest “during the signal reception...adjustment of the gain until a predetermined noise level is obtained” as claimed in amended claims 1, 5 and 9 of the present invention.

Takagi discloses a receiving apparatus which can cope with the fluctuation of input level of an RF signal. Tagaki further recites a method for receiving a high frequency signal with a control of the gain of the received signal. The method disclosed by Takagi requires that the low noise amplifier (LNA) 13 receive a high voltage signal such that the amplifier amplifies or attenuates the input signal. The change over between the amplification process and the attenuation process is performed in order to avoid jamming waves (see column 5). However, similarly to Igarashi et al., Takagi neither discloses nor suggests that “during signal reception...extraction of the thermal noise power at the end of the reception facility” as claimed in amended claims 1, 5 and 9 of the present invention. Furthermore, similarly to Igarashi et al., Takagi neither discloses nor suggests “during the signal

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reception...adjustment of the gain until a predetermined noise level is obtained” as
claimed in amended claims 1, 5 and 9 of the present invention.

As admitted by the Examiner in point 2 of the rejection, both Igarashi et al. and Takagi fail to disclose the above feature as claimed in amended claims 1, 5 and 9 of the present claimed invention.

In view of the above remarks and amendments to claims 1, 5 and 9, it is respectfully submitted that Igarashi et al. when taken alone or in combination with Takagi does not make the present claimed invention unpatentable. As claim 2 is dependent on claim 1, claim 6 dependent on claim 5 and claim 10 dependent on claim 9, it is respectfully submitted that claims 2, 6 and 10 are patentable for the same reasons as discussed above regarding claims 1, 5 and 9, respectively. Thus, it is further respectfully submitted that this rejection has been satisfied and should be withdrawn.

Rejection of Claims 3, 7, and 11 under 35 USC 103(a)

Claims 3, 7, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi et al (US 6,236,848 in view of Takagi (US 6,226,504) and further in view of Kato (US 5,199,045).

As claims 3, 7 and 11 have been cancelled and their limitations have been incorporated into claims 1, 5 and 9, respectively, Applicant respectfully submits that the rejections of claims 3, 7 and 11 are moot and should be withdrawn.

Furthermore, as discussed above regarding the rejection of claims 1, 5 and 9, Igarashi et al., Takagi and Kato neither disclose nor suggest “during signal reception...extraction of the thermal noise power at the end of the reception facility” as claimed in amended claims 1, 5 and 9 of the present invention. Furthermore, Igarashi et al. neither disclose nor suggest “during the signal reception...adjustment of the gain until a predetermined noise level is obtained” as claimed in amended claims 1, 5 and 9 of the present invention.

Applicant further respectfully submits that amended claims 1, 5 and 9 including the limitations of claims 3, 7 and 11, respectively, are patentable over the combination

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of Igarashi et al., Takagi and Kato as rejected by the Examiner in point 2 of the Office
Action.

Kato describes a communication apparatus wherein the gain of the amplifier is set in view of the distance to the other stations (see column 3 -- last paragraph and column 4 -- first paragraph). This is not equivalent to the method of the present claimed invention. Specifically, Kato neither discloses nor suggests "during signal reception...extraction of the thermal noise power at the end of the reception facility" as claimed in amended claims 1, 5 and 9 of the present invention. Furthermore, Kato neither discloses nor suggest "during the signal reception...adjustment of the gain until a predetermined noise level is obtained" as claimed in amended claims 1, 5 and 9 of the present invention. Rather, Kato discloses that "a DC component is extracted by the low pass filter" and thus does not disclose nor suggest "extraction of the thermal noise power at the end of the reception facility" as in the present claimed invention. In fact, Kato is silent as to location where the extraction is performed, and since the extraction is of a DC component as compared to "the thermal noise power" as in the present claimed invention, Kato does not disclose nor suggest the method as claimed in claims 1, 5 and 9 of the present claimed invention.

Additionally, there is no motivation or reason to combine the systems disclosed by Igarashi et al., Takagi and Kato in order to solve the problem solved by the present claimed invention. Specifically, a person skilled in the art would not look to combine the integrated circuit of Igarashi et al. with the receiving apparatus of Takagi or the communication apparatus of Kato in order to produce "a method of automatic control of the gain in a radio frequency signal reception device" as claimed in the present claimed invention.

Furthermore, even if the systems of Igarashi et al., Takagi and Kato were to be combined, the resulting system or method would not produce the method as claimed in claims 1, 5 and 9 of the present invention. Specifically, the combination of Igarashi et al., Takagi and Kato would produce a integrated circuit for a mobile phone that receives a high frequency signal wherein the gain of the amplifier contained therein is set in view of the distance to other stations. This system/method is NOT "a method for automatically controlling the gain in a radiofrequency signal reception device, said device comprising at least one first low-noise amplification stage placed following a reception antenna, and at least one variable-gain device placed in the reception facility, the method comprising the steps of: neutralization of the signal received by the

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antenna... wherein, during signal reception...extraction of the thermal noise power at
the end of the reception facility; and adjustment of the gain until a predetermined noise
level is obtained" as in the present claimed invention.

In view of the above remarks, applicant respectfully submits that Kato adds
nothing when taken alone or in any combination with Igarashi et al. and Takagi that
would make the present invention as claimed in claims 1, 5 and 9 unpatentable.

Having fully addressed the Examiner's rejections, it is believed that, in view of
the preceding amendments and remarks, this application stands in condition for
allowance. Accordingly then, reconsideration and allowance are respectfully solicited.
If, however, the Examiner is of the opinion that such action cannot be taken, the
Examiner is invited to contact the applicant's attorney at the phone number below, so
that a mutually convenient date and time for a telephonic interview may be scheduled.

No fee is believed due. However, if a fee is due, please charge the additional fee
to Deposit Account 07-0832.

Respectfully submitted,
Jean-Yves Le Naour

By: 

Jack Schwartz
Reg. No. 34,721
Tel. No. (609)734-6866

Thomson Licensing Inc.
Patent Operations
PO Box 5312
Princeton, NJ 08543-5312
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